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Mr. William Caton, Secretary
Federal Communications Commission
1919 M Street N.W.
Washington D.C. 20554

May 3, 1995

Re: Comments on NPRM (FCC95-46), ET Docket 95-19

Dear Mr. Caton,

Listed below are our comments regarding ET Docket 95-19. If any clarification is needed or if you have any questions, please feel free to contact us at the numbers listed below.

"Equipment Authorization Requirements"

We agree with the proposal to streamline the equipment authorization process, but would like to see the proposal expanded to include all digital devices that are covered by Part 15. This would provide a single process for the authorization of equipment and would simplify and reduce the cost to manufacturer and testing labs alike.

The proposal identifies a "responsible party". The final proposal needs to better define this individual with regard to his/her position within a company or organization (i.e. what management level should be required to sign the DoC), their duties and responsibilities as this designated person, and penalties for false representation and/or non-conforming product.

"National Voluntary Laboratory Accreditation Program (NVLAP)"

We agree that some sort of accreditation program would be (is) needed.

Users of U.S. produced products, both in the U.S. and in foreign countries, should be able to expect that the product meets the required regulations and that the person(s) who inspected or tested the product are competent to make such a determination. The current method of listing the test facility with the FCC does not cover issues such as competency of laboratory personnel, laboratory quality assurance programs nor the fitness of the laboratory to make these measurements other than via site attenuation.

Accreditation by NVLAP would provide a minimum level of assurance that the laboratory can perform the required functions.

The current cost of NVLAP accreditation would seem to make this a distasteful part of the proposal. We have only one laboratory and are accredited for only test methods 12/C01 and 12/R01 with NVLAP fees averaging $3500.00 per year. If a NVLAP type program is to gain general acceptance, the cost issues will have to be addressed.

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"Authorization of Modular Personal Computers"

The issues and concerns that are brought out by "...individual authorization of personal computer CPU boards...", "...personal computers constructed from these components..." and "...without need of further testing..." require comments of a more detailed nature. Listed below are the paragraph numbers as they were presented in ET Docket 95-19 and our response.

Items 5 &14.

We have found a number of personal computer products do not comply with the regulations (even those from reputable manufacturers). The conclusion that the regulatory process is working may be flawed. The search for a reliable, compliant test artifact/host system is a task loathed by most EMC test facilities.

The idea that just anybody can assemble a compliant system is a dangerous proposition, when we have seen a single disassembly operation of a previous compliant system suffer failing EMC performance.

Item 15.

Work on the definition of components vs. sub-assemblies has been done in detail in The Guide to the EMC Directive 89/336/EEC by Chris Marshman, IEEE Press, ISBN 0-7803-0445-4. Refer to page 54, item 9; page 55, item 17; and page 37 item 3.3.3. Definitions as provided in Marshman's book could go a long way to clearing up the ambiguity of required regulation on components. In addition, these regulations would then follow the precedent set by the European Norms.

Item 17.

We feel the technical standards in Part 15 should be expanded to include enclosed peripherals such as hard and floppy disk drives, MO drives, tape drives, video boards, etc. Failure to include these devices will render the idea of assembling a compliant system from "...individually authorized" components impossible.

Item 18.

If data shows a system composed of individually compliant components will comply when assembled, then we are in agreement. However, we are not familiar with any studies on this subject. If data is not available a study as described in our response to items 20 and 22 could be used to validate this proposal.

Item 20.

This is a particularly troublesome problem and the proposal has merit. We would like to make the following comments.

The first test (or stand-alone test) needs to be clearly defined. We would like to suggest that a precise procedure be generated for this test, preferably through a joint FCC and ANSI C63 sub-committee effort. It would be very easy to make a product appear worse (or better) depending on how the test is performed. In particular, the following problems come to mind:

1 Location, EM isolation, method of coupling to the board under test, and type of power supply

2 Operating mode (and verification thereof) of the CPU during the test

3 Location of the CPU board (horizontal polarity, 80 cm above the ground plane, etc.)

4 Cables (such as keyboard, parallel, etc.) to be attached, if any.

In addition, the selection of limits for this test needs to be carefully considered. We are unsure whether the proposed 6 dB figure is correct because the primary radiating methods for the board (cables and slots) may not be present in the test configuration. If this method is to be accepted, we strongly feel that test results must be generated for several typical products at several test facilities and the results evaluated in order to validate this method. We would be willing to assist in this effort.

The second test method (system test) could be equally prone to incorrect results depending on what the manufacturer uses as a "typical" configuration. Typical must be precisely defined.

To evaluate multiple processors, we propose two options. The first option is to pre-scan all the possible processors in the stand-alone test, selecting the one processor with the highest emissions for the system test. The second option is to do a pre-scan using near field techniques and determine the processor selected for the stand-alone and system tests.

Item 21.

We have seen a particular case where one CPU's supply passed when connected to a particular peripheral while another CPU supply failed (when in the same test configuration) because of the power filter design.

In addition, some power supply emission profiles vary widely depending on load. Perhaps a valid test would be to pre-scan the supply with a minimum resistive load, a maximum resistive load, and then with a "typical" CPU. This would identify the "broad band" characteristics of the supply.

Item 22.

This is indeed a dangerous area. Not only is the shielding effectiveness important, but equally critical is the ability of the enclosure to properly ground the shield of the I/O cables. This can be further aggravated by the cable grounding method used for each different CPU or interface board.

If the stand-alone test requires the attachment of cables, then the grounding issue becomes less important. However, we doubt many existing CPU boards are capable of being within 6 dB (or 12 dB even) of the limit without an enclosure when cables are attached.

Again, this subject should be studied along with the board requirements of Items 18 and 20 by several test facilities for a variety of products. Once again, we would be willing to assist in this process and feel that an ANSI working group would be a useful tool.

Items 16, 19, 23 - 25.

We are in concurrence with the FCC proposals.

Sincerely,

Patrick Richardson
Chief Engineer
Member, ANSI C63 SC1 WG 1-8.1 and 1-13.6

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Laboratory Director
Member, ANSI C63 SC1